

length is due almost entirely to differences in filament length, there being hardly measurable differences in anther length. The shorter dehiscence entirely before the longer, which continue to increase in length until in the fully open flower a maximum is reached, as indicated by the dotted tips in the figure. The preserved material at hand clearly indicates the maturity and dispersal of pollen from the short stamens before the stigma is functional, while the last pollen is dropped from the long stamens after that period.

The following species have also been examined, with results as given. With clearly evident dimorphic stamens are the following species: *E. citrinum* Wats., *E. giganteum* Lindl., *E. montanum* Wats., *E. propullans* A. Gray. The last named is represented here by a very few specimens, and I would be glad to know whether or not the same condition of stamen length is evident in larger collections. This is of special importance because of the fact that the illustration in Britton and Brown's Illustrated Flora shows the stamens of equal length. *E. parviflorum* (Wats.) Gooding has stamens of varying length but not clearly of two groups as in the other species examined. This point is important as bearing upon the possible relationship of this species with *E. grandiflorum* Pursh, since it was considered by Watson as but a variety or at most a subspecies.

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## BRYOLOGICAL NOTES

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### III. FURTHER MOSSES NEW TO ICELAND\*

As introductory to this short list of species it should be said that my Icelandic itinerary of 1914, which was largely controlled by other considerations than those of botanical research, consisted of part of a day at Seydhisfjörður on the east coast, where collections were made at points readily accessible from the harbor, another half-day at Akureyri in the north, where

\* Numbers I and II of this series were published in *TORREYA*, April 1915 and February, 1916.

collecting was done principally along the river Glerá, a day at Ísafjörður in the northwest with extensive collecting near the shore, and finally about six weeks at Reykjavík in the southwest, from which place excursions were made as far as the Ölfusárbrú in the southern lowland, inland to Thingvellir, and to the northward to Borgarnes on the west coast. Species not previously reported or left uncertain in previous records are:

1. *Sphagnum magellanicum* Brid. Vífilsstadir near Reykjavík, Aug. 13; in more immediate proximity of Reykjavík, Aug. 15. It is not at all impossible that older records of *S. cymbifolium* from the island are referable to this species. I found none of the true *S. cymbifolium* (*S. palustre* Linn.), but of its group only *S. magellanicum* and *S. papillosum* Lindb., which last had been previously reported. In general one is surprised by the paucity of *Sphagnum* in Iceland, both as to bulk and variety. Probably the predominantly basic nature of the volcanic rock is largely responsible. The Icelandic turf and peat are mostly produced from plant remains other than *Sphagnum*.

2. *Dicranella Grevilleana* (Brid.) Schimp. Wet spot on top of Lágafell near Reykjavík, Aug. 4; fruited. This summit is not a very high one, as its name indicates, but was the highest accessible to me. The plant is one of decidedly arctic-alpine tendencies.

3. *Dicranella Schreberi* (Sw.) Schimp. Wet place among rocks on the hill by Gróttta near Reykjavík, July 18; fruited. This species is allied to the last, my specimens showing very nicely the characters supposed to separate them.

4. *Campylopus Schimperii* Milde. Marshy place just outside Reykjavík to the west; July 20. This species seems to be the one of most northerly tendency in the genus and its distribution links Europe through Iceland and Greenland with North America, a phenomenon common enough in various other genera, but apparently unique in *Campylopus*. The *C. compactus* Schimp. of Grönlund's list is to be understood as this species, but he left it with a ? as of uncertain identification. His specimen was from the mountain Esja not far from Reykjavík.

5. *Didymodon rufus* Lor. On the lava-field by Hafnarfjörður,

Aug. 8. This is a plant of high northern distribution, appearing also in the Alps. The identification of my specimen rests upon its perfect agreement with one from northern Norway collected by Hagen, without the help of which it would probably have remained undetermined. As the fruit of this species is as yet unknown, its generic affinities are perhaps not absolutely certain. *Didymodon* is at best an artificial genus.

6. *Tortula subulata* (L.) Hedw. On rocks at Seydhisfjörður, July 8; on the lava-field by Hafnarfjörður, July 23; on rocks by the waterfall Tröllafoss near Reykjavík, July 28. This species must be common and it is probably due merely to an oversight that Grönlund omitted it from his revised list of 1881 after having included it in his preliminary one of 1873.

7. *Pohlia polymorpha* Hornsch. On lava-field by Hafnarfjörður, July 23; on slope of Lágafell near Reykjavík, Aug. 4. This species was fully to be expected and is doubtless not uncommon.

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## REVIEWS

### Clements's Plant Succession \*

An important stage in the development of ecology is marked by the appearance of Doctor Clements's Plant Succession. This large and comprehensive work is the first systematic monograph on the series of complex phenomena in the development of vegetation called succession. It contains in addition to the author's own investigations a full account of the literature not only of the United States but of the entire world.

Just as many students of modern ecology have found Research Methods in Ecology (1905) so helpful in solving problems in a quantitative manner, likewise the rapidly growing ranks of synecologists may well turn to Plant Succession for a clear statement of the development of the subject, its present status, and its future outlook. Clements's work in the field for 20

\* Plant Succession, an analysis of the development of vegetation. Frederic E. Clements, professor of botany in the University of Minnesota. Carnegie Institution of Washington, 1916, pp. i-xiii + 1-512, with 61 photographic plates and 51 figures in the text.